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## Appendix to INR/RFE Memorandum

dated November 10, 1965, subject: "Evaluation of Air Attacks against North Vietnam" (Top Secret)

Methodology of Estimating Casualties:

The CIA report examines separately casualties caused around fixed targets and those caused by armed reconnaissance.

## 1. Fixed targets.

Two pre-strike estimates were made by calculating the number of people expected to be in the vicinity of the target without warning and with warning. Another estimate was based on post-strike photography showing actual damage. A fourth estimate was based on the World War II German ratio between physical destruction and casualties. These four estimates were then averaged and the results were generalized to other urban centers.

[redacted] All four of these estimates contain arbitrary elements -- unavoidable but also quite possibly very wrong. To take account of warning and air defense the probable casualties are simply reduced by a factor of ten. Some reduction is clearly justified but there is no experience or logical argument leading to this factor of ten -- it just seems reasonable. If in reality a factor of 5 or 20 is more accurate, then the fixed-target casualty estimates are roughly half as large or twice as large as this report suggests. The fourth estimate in the average -- the German analogy -- is also at best a very rough analogy. The construction of German cities, the efficacy of air defense and medical measures, the probable behavior of the population -- all are clearly different from Vietnam, and to have the differences cancel out is a rather large assumption. The mechanical extension of the Nam Dinh estimate to all urban areas is also a very rough estimative procedure. It was approximately checked by looking at roof damage to six other towns and in the time available no more could really have been done, but it adds to the uncertainty of the whole estimate. It thus should be concluded that the "range" of 1,700 to 2,400 casualties around fixed targets does not bracket the outside possibilities but merely gives a "most probable" figure which is likely to be toward the lower end of the possible range. There may well have been only 1,000 or so casualties in this category; there equally well may have been 5,000 or more.

## 2. Armed reconnaissance.

Two methods are used. One assumes a random distribution of bombs and of people over the entire area exposed to armed reconnaissance. This is patently not the case: both are concentrated along communication lines. The study assumes that this deviation, which makes the estimate low by a factor of 10 or even 100, is compensated for by the tendency of people to

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avoid the areas where bombs may be expected. If each of these compensating factors were in the order of magnitude of 2 or 3, then this cancelling out could perhaps be defended, but the deviations from a random meeting between people and bombs are so very large, that this estimate cannot be taken very seriously. 25X1

3. Combining our criticisms of both elements of the CIA estimates, we suggest that the probable range of civilian casualties is between 3,000 and 10,000. The procedures in this report, though the best available in the time available, do not support any greater precision than this.

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Remarks: Jim Leonard of State/INR forwarded this briefing note on the NVA Casualties study. We thought we had staved off some of these criticisms. A point he makes in para. 1 is that four separate methods, though none was perfect, produced roughly the same range of figures.

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